Hypertension 2016 Journal Club

Hussein Sheashaa, MD, FACP

Professor of Nephrology, Urology and Nephrology Center and Director of Medical E-Learning Unit, Mansoura University, and Executive Director of ESNT- Virtual Academy:
http://lms.mans.edu.eg/esnt/

DNG August 18th, 2016

Corners

1. Definitions
2. Goal and target of BP control
3. Transporters and BP
4. Immunity, transplantation and HTN
5. Obesity and HTN
6. Pregnancy and HTN
7. Adherence
8. Miscellaneous

Definitions

Urology and Nephrology Center

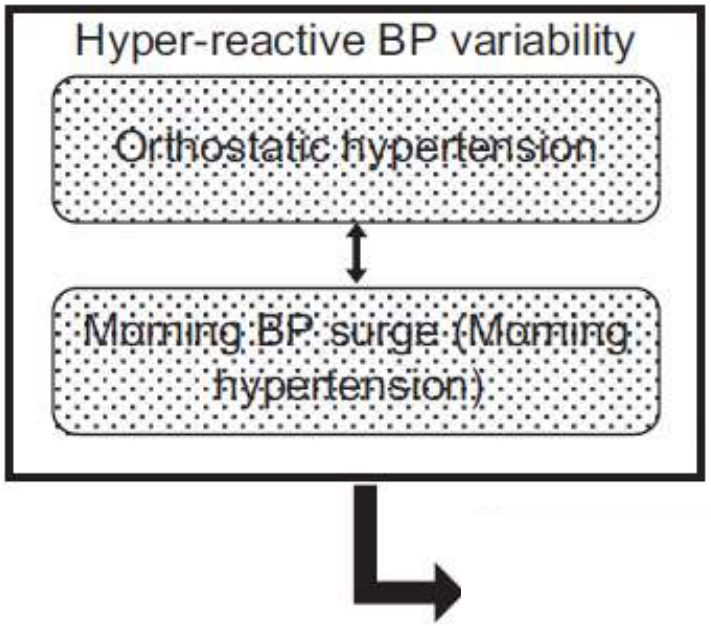
Masked Hypertension and Elevated Nighttime Blood Pressure in CKD: Prevalence and Association with Target Organ Damage

All Participants (N=1492)	Controlled Clinic and ABP (n=735), 49.3%	White-Coat Hypertension (n=61), 4.1%	Masked Hypertension (n=415), 27.8%	Sustained Hypertension (n=281), 18.8%

- Controlled BP: clinic BP <140/90 mmHg and 24-hour ABP <130/80 mmHg
- White-coat hypertension: clinic BP ≥140/90 mmHg and 24-hour ABP <130/80 mmHg
- Masked hypertension: clinic BP <140/90 mmHg and 24-hour ABP ≥130/80 mmHg
- Sustained hypertension: clinic BP ≥140/90 mmHg and 24-hour ABP ≥130/80 mmHg.

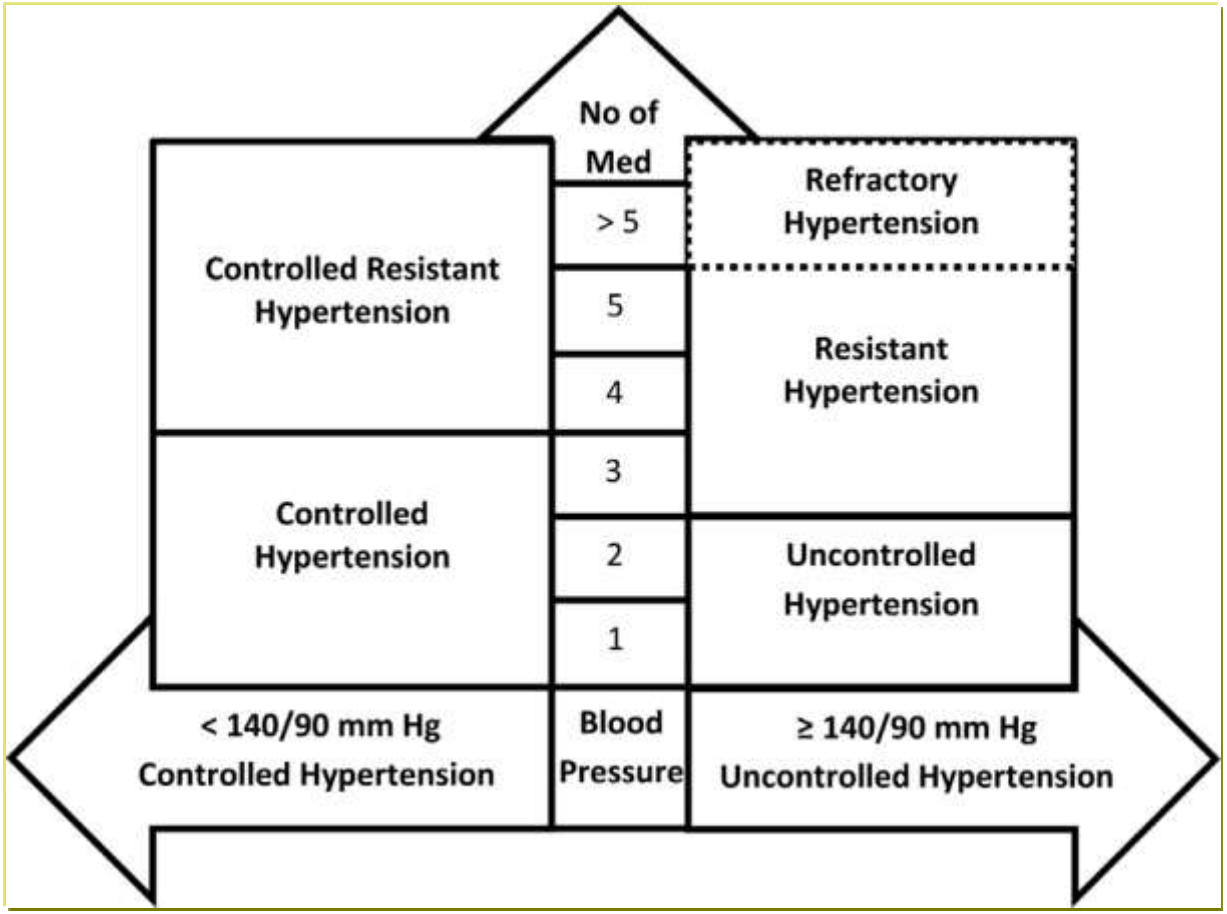
Clin J Am Soc Nephrol 11: 642–652, April 2016

Definitions



Hypertension Research (2016), 1–2

Definitions



Canadian Journal of Cardiology 32 (2016) 603-606

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Hypertension Gudelines:
Goal and Target

Urology and Nephrology Center

HYPERTENSION

When should we treat hypertension in patients with diabetes?

Sverre E. Kjeldsen and Ingrid Os

BP-lowering therapy and diabetes

Baseline systolic BP	Effects of BP-lowering treatment
>150 mmHg	↓All-cause mortality
	↓Cardiovascular mortality
	↓Myocardial infarction
	↓End-stage renal disease

NATURE REVIEWS | **CARDIOLOGY 2016**

Brunström, M. & Carlberg, B. Effect of antihypertensive treatment at different blood pressure levels in patients with diabetes mellitus: systematic review and meta-analyses. *BMJ* **352**, i717 (2016).

Management of HTN: Goal and Target

Urology and Nephrology Center

DNG

hypertension

Clinical trials of intensive versus less intensive control of hypertension: HOPE or HYPE?

Christina M. Wyatt[1] and Glenn M. Chertow[2]

The recently published Heart Outcomes Prevention Evaluation trial (HOPE-3) demonstrated no benefit of lowering blood pressure with candesartan and hydrochlorothiazide in persons at intermediate cardiovascular risk and with adequate blood pressure control as determined by the enrolling physician. The results of Systolic Blood Pressure Intervention Trial (SPRINT) and HOPE-3 highlight the importance of considering differences in study design and patient population when interpreting the results of clinical trials.

Refers to: Lonn EM, Bosch J, Lopez-Jaramillo P, et al. HOPE-3 Investigators. Blood-pressure lowering in intermediate-risk persons without cardiovascular disease. *N Engl J Med.* 2016;374:2009–2020.

Kidney International (Sep 2016) 90, 460–462

Management of HTN: Goal and Target

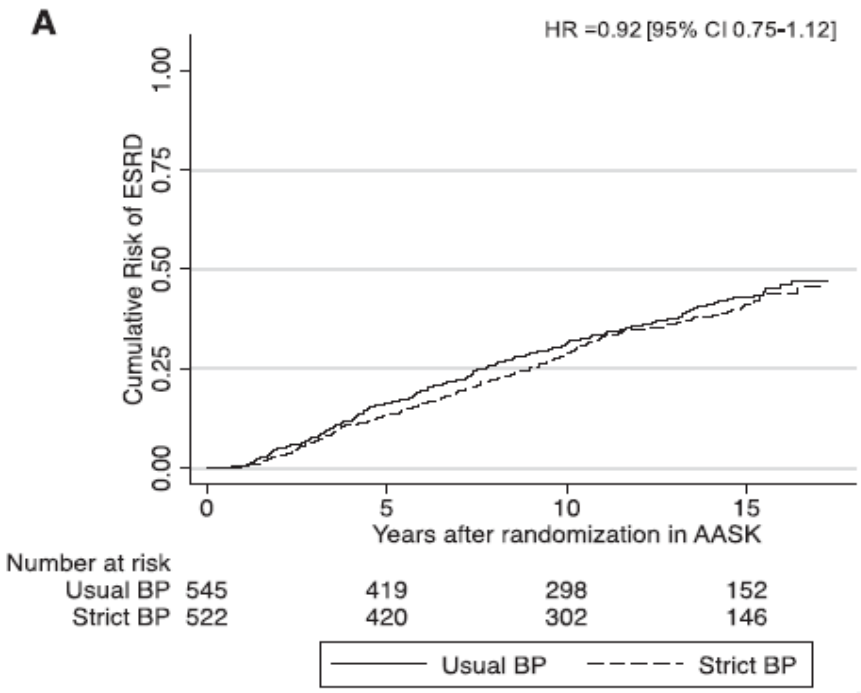
Urology and Nephrology Center

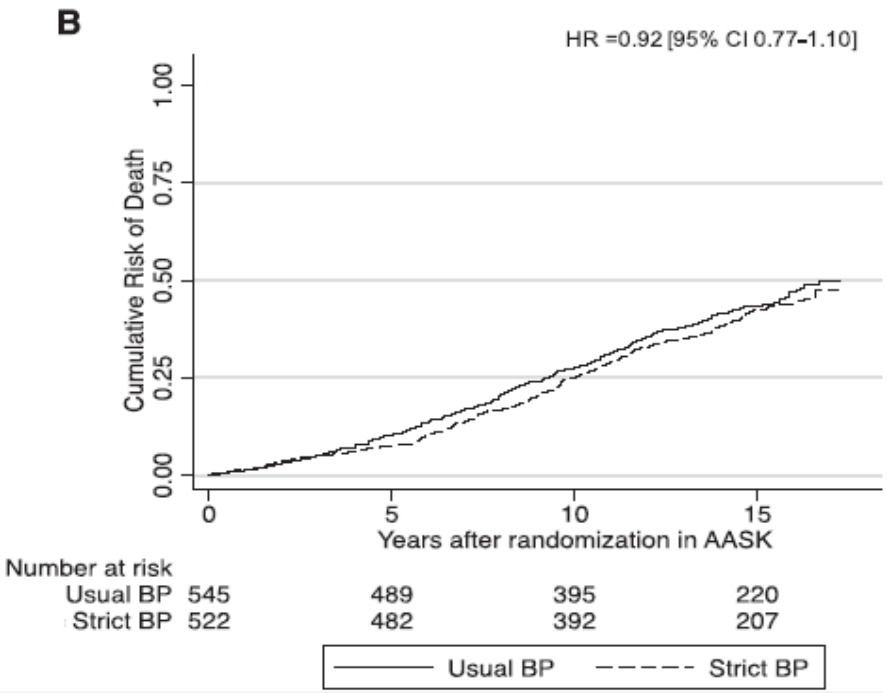
Design and results of the HOPE-3 and SPRINT trials

	HOPE-3	SPRINT
Intervention	Candesartan/HCTZ 16/12.5 mg versus placebo	Systolic BP target < 120 versus < 140 mm Hg
Specified BP measure	Attended automated BP measurement; average of 2 seated measures at least 1 min apart	Unattended automated BP measurement; average of 3 seated measures 5 min apart
Achieved BP difference	6 mm Hg	13 mm Hg
Follow-up	5.6 yr	3.3 yr
Primary outcome	(i) Composite of cardiovascular death, nonfatal MI, and nonfatal stroke (ii) Composite of the above plus resuscitated cardiac arrest, heart failure, or revascularization	Composite of cardiovascular death, nonfatal MI or acute coronary syndrome, nonfatal stroke, or decompensated heart failure
Event rate	(i) Cumulative incidence 4.1% versus 4.4% (ii) Cumulative incidence 4.9% versus 5.2%	Annual incidence 1.65% versus 2.19%
Treatment effect	(i) HR 0.93; 95% CI, 0.79–1.10 (ii) HR 0.95; 95% CI 0.81–1.11	HR 0.75; 95% CI 0.64–0.89

Kidney International (Sep 2016) 90, 460–462

Management of HTN: Goal and Target

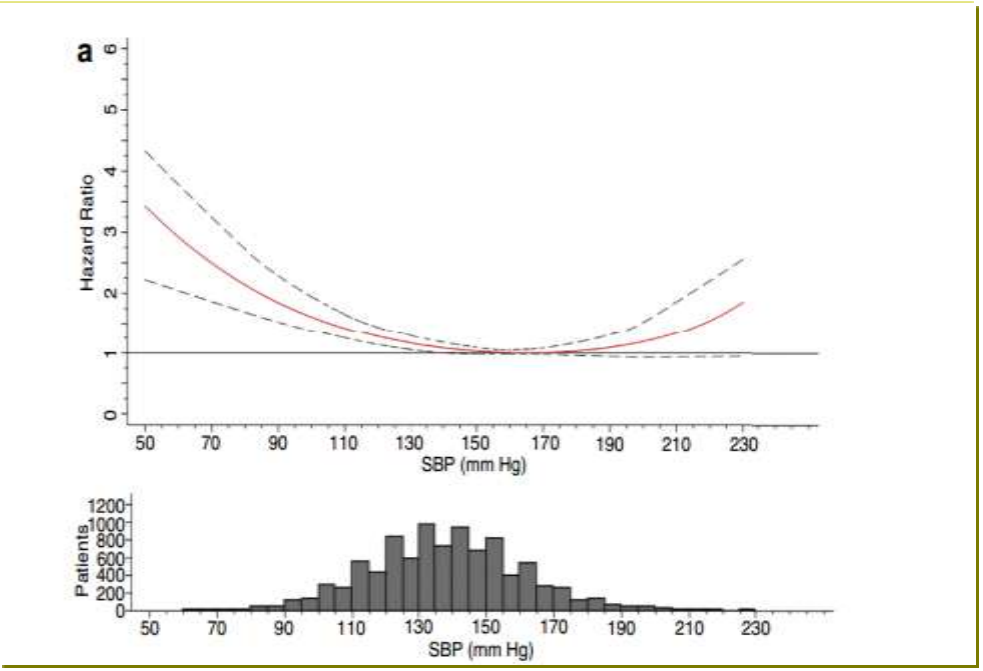


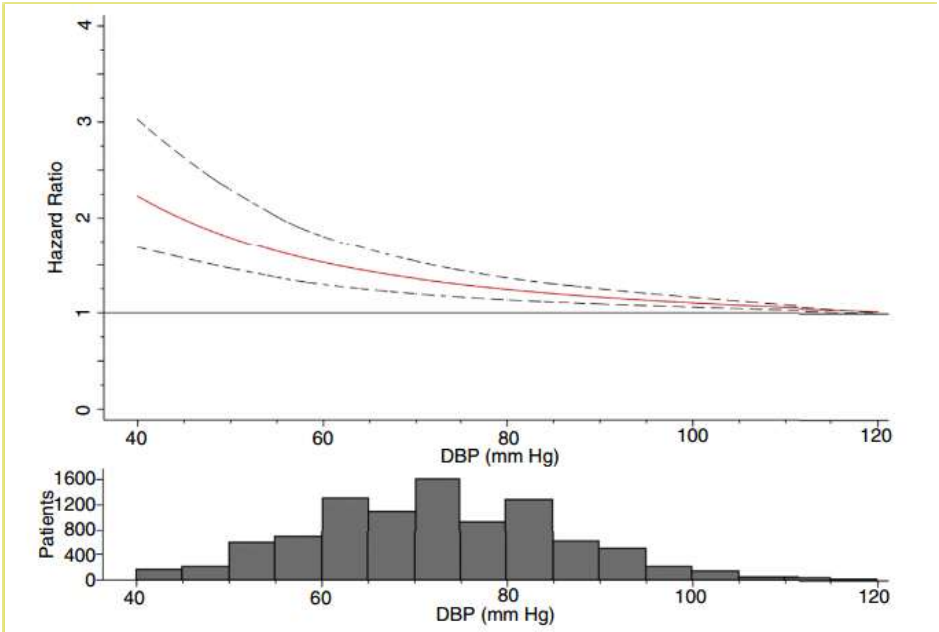


BP Control and Long-Term Risk of ESRD and Mortality

J Am Soc Nephrol 2016, in press

Management of HTN: Goal and Target





clinical investigation www.kidney-international.org

Multiphasic effects of blood pressure on survival in hemodialysis patients

Thierry Hannedouche[1], Hubert Roth[2], Thierry Krummel[1], Gérard M. London[3], Guillaume Jean[4], Jean-Louis Bouchet[5], Tilman B. Drüeke[6] and Denis Fouque[7]; on behalf of the French Observatory[1]

[1]Service de Néphrologie, Hôpitaux Universitaires de Strasbourg, Faculté de Médecine, Strasbourg, France; [2]Centre de Recherche en Nutrition Humaine Rhône-Alpes, Pôle Recherche CHU-Grenoble, Inserm U1055-Bioénergétique, Université Grenoble-Alpes, France; [3]Hôpital Manhes, Fleury-Mérogis, France; [4]Centre de Rein Artificiel, Tassin-La-Demi-Lune, France; [5]Centre de Traitement des Maladies Rénales Saint-Augustin, Bordeaux, France; [6]Inserm U1018, Centre de recherche en Epidémiologie et Santé des Populations, Universitaire Paris-Saclay, Universitaire Paris-Sud, Université de Versailles Saint-Quentin-en-Yvelines, Villejuif, France; and [7]Department of Nephrology, Hôpital Lyon Sud, Université de Lyon, Centre Européen de Nutrition pour la Santé, Lyon, France

Kidney International (Sep 2016) 90, 674–684

Hypertension Gudelines:
Goal and Target

Urology and Nephrology Center

Patients with hypertension and diabetes	Grade of recommendation	Level of evidence
a. Antihypertensive therapy is strongly recommended in patients with diabetes and systolic blood pressure ≥140 mmHg.	Strong	I
b. In patients with diabetes and hypertension, any of the first-line antihypertensive drugs that effectively lower blood pressure are recommended.	Strong	I
c. In patients with diabetes and hypertension, a blood pressure target of <140/90 mmHg is recommended.	Strong	I
d. A systolic blood pressure target of <120 mmHg may be considered for patients with diabetes in whom prevention of stroke prioritised.	Weak	–
e. In patients with diabetes where treatment is being targeted to <120 mmHg systolic, close follow-up of patients is recommended to identify treatment related adverse effects including hypotension, syncope, electrolyte abnormalities and acute kidney injury.	Strong	–


Guidelines

Hypertension Canada's 2016 Canadian Hypertension Education Program Guidelines for Blood Pressure Measurement, Diagnosis, Assessment of Risk, Prevention, and Treatment of Hypertension

Heart Foundation

Guideline for the diagnosis and management of hypertension in adults 2016

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Transporters in Focus: What is Pendrin?

Urology and Nephrology Center

EDITORIAL www.jasn.org

Pendrin—A New Target for Diuretic Therapy?

Carsten A. Wagner
National Center for Competence in Research Kid
of Physiology, University of Zurich, Zurich, Switze

BASIC RESEARCH www.jasn.org

Double Knockout of the Na^+-Driven Cl^-/HCO_3^- Exchanger and Na^+/Cl^- Cotransporter Induces Hypokalemia and Volume Depletion

Anne Sinning,* Nikita Radionov,†‡ Francesco Trepiccione,†‡ Karen I. López-Cayuqueo,†‡§ Maximilien Jayat,†‡ Stéphanie Baron,‖ Nicolas Cornière,¶ R. Todd Alexander,** Juliette Hadchouel,†‡ Dominique Eladari,†‡‖ Christian A. Hübner,* and Régine Chambrey†‡††

*Institut für Humangenetik, University Hospital Jena, Friedrich Schiller Universität, Jena, Germany; †Institut National de la Santé et de la Recherche Médicale U970, Paris Cardiovascular Research Center, Paris, France; ‡Faculty de Medicine, Université Paris-Descartes, Paris, France; §Centro de Estudios Científicos (CECs), Valdivia, Chile; ‖Department de Physiologie, Hopital Européen Georges Pompidou, Assistance Publique-Hopitaux de Paris, Paris, France; ¶Service de Néphrologie et Transplantation Rénale, Centre Hospitalier Universitaire de La Réunion, St. Denis, France; **Departments of Pediatrics and Physiology, University of Alberta, Edmonton, Alberta, Canada; and ††Centre National de la Recherche Scientifique, Paris, France

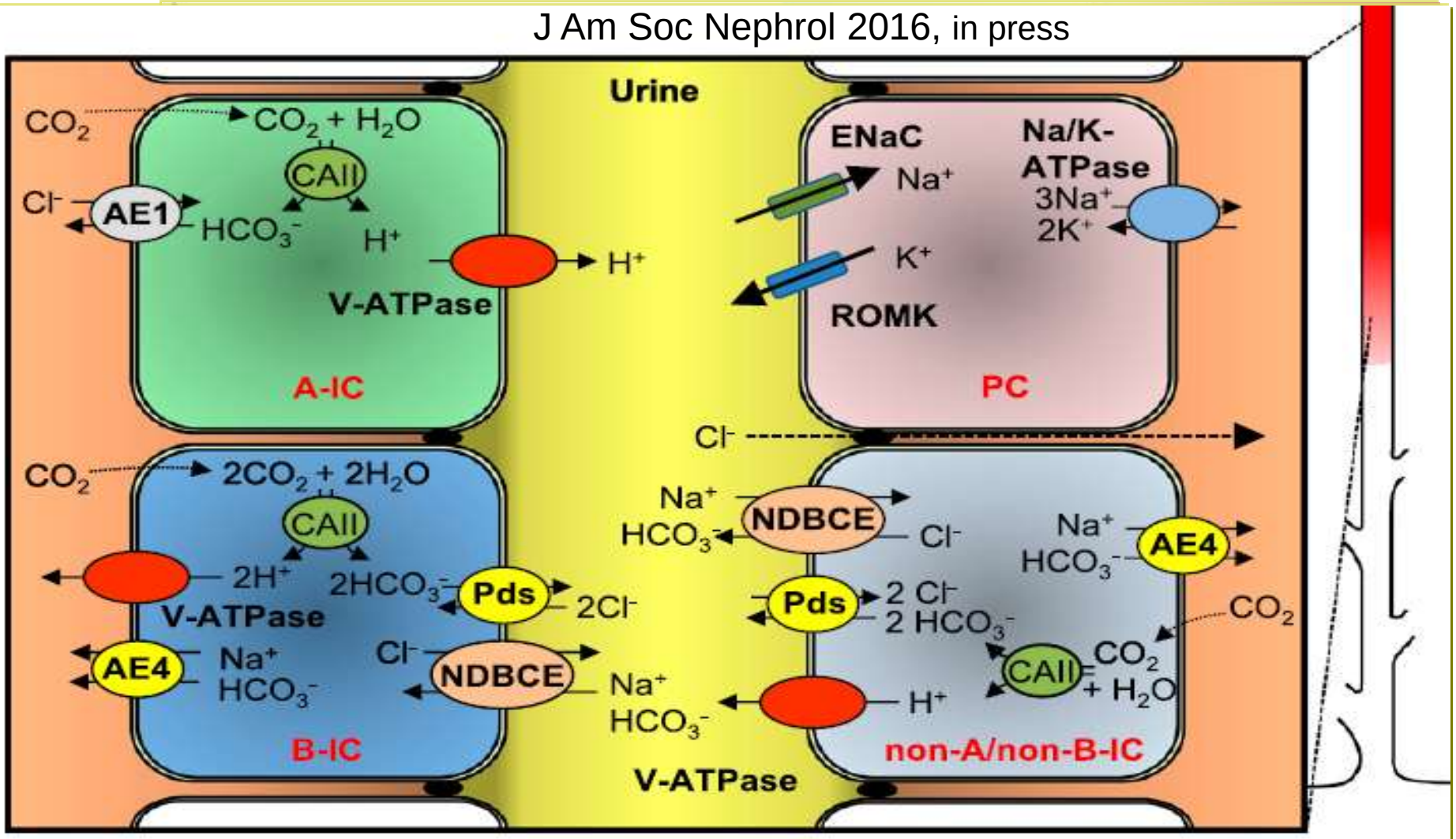
J Am Soc Nephrol 2016, in press

Transporters in Focus: Where is Pendrin

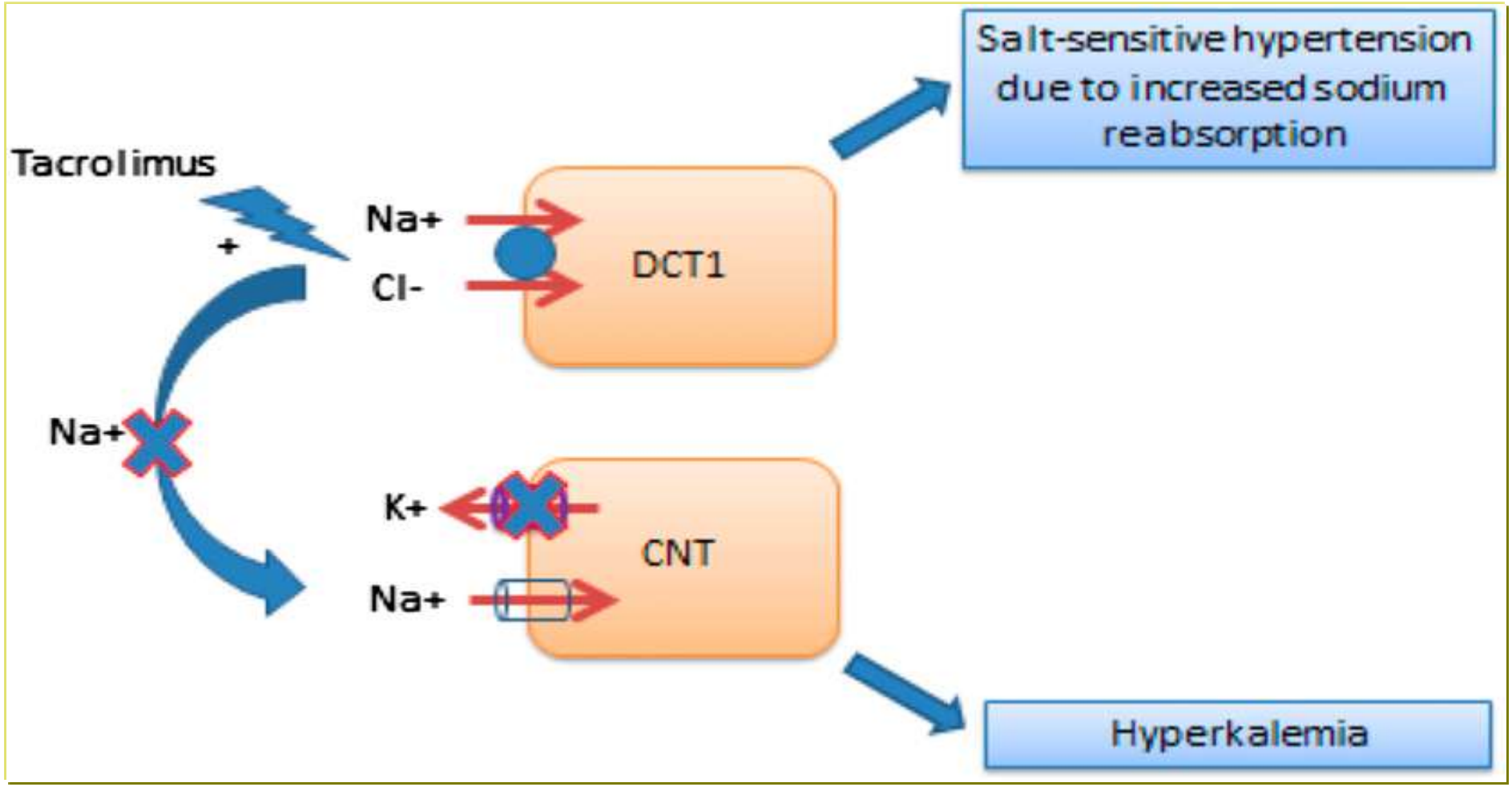
Urology and Nephrology Center

DNG Dekanate Nephrology Group

J Am Soc Nephrol 2016, in press



Transporters in Focus:
Tacrolimus induced HTN?



Clin J Am Soc Nephrol. 2016 Apr 7;11(4):735-44

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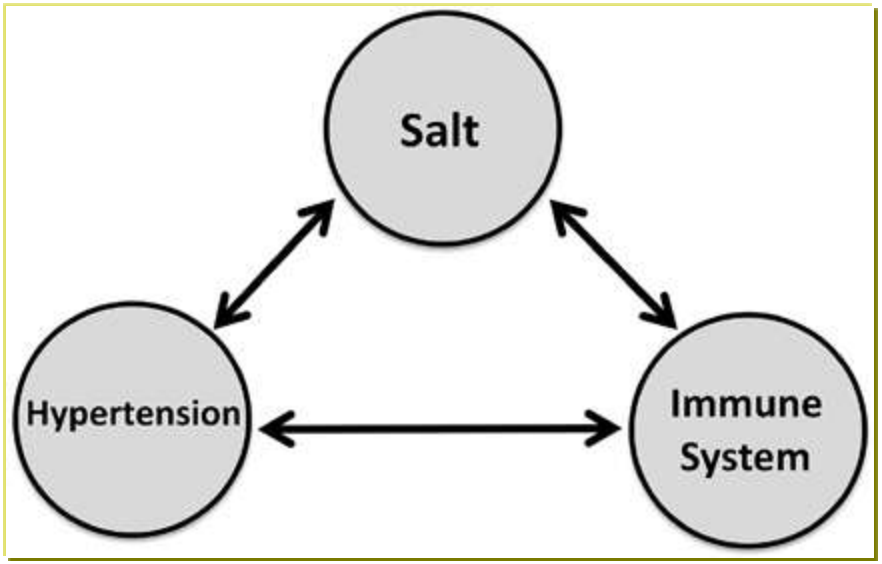
Salt and Hypertension

Urology and Nephrology Center

National Heart, Lung, and Blood Institute Working Group Report on Salt in Human Health and Sickness

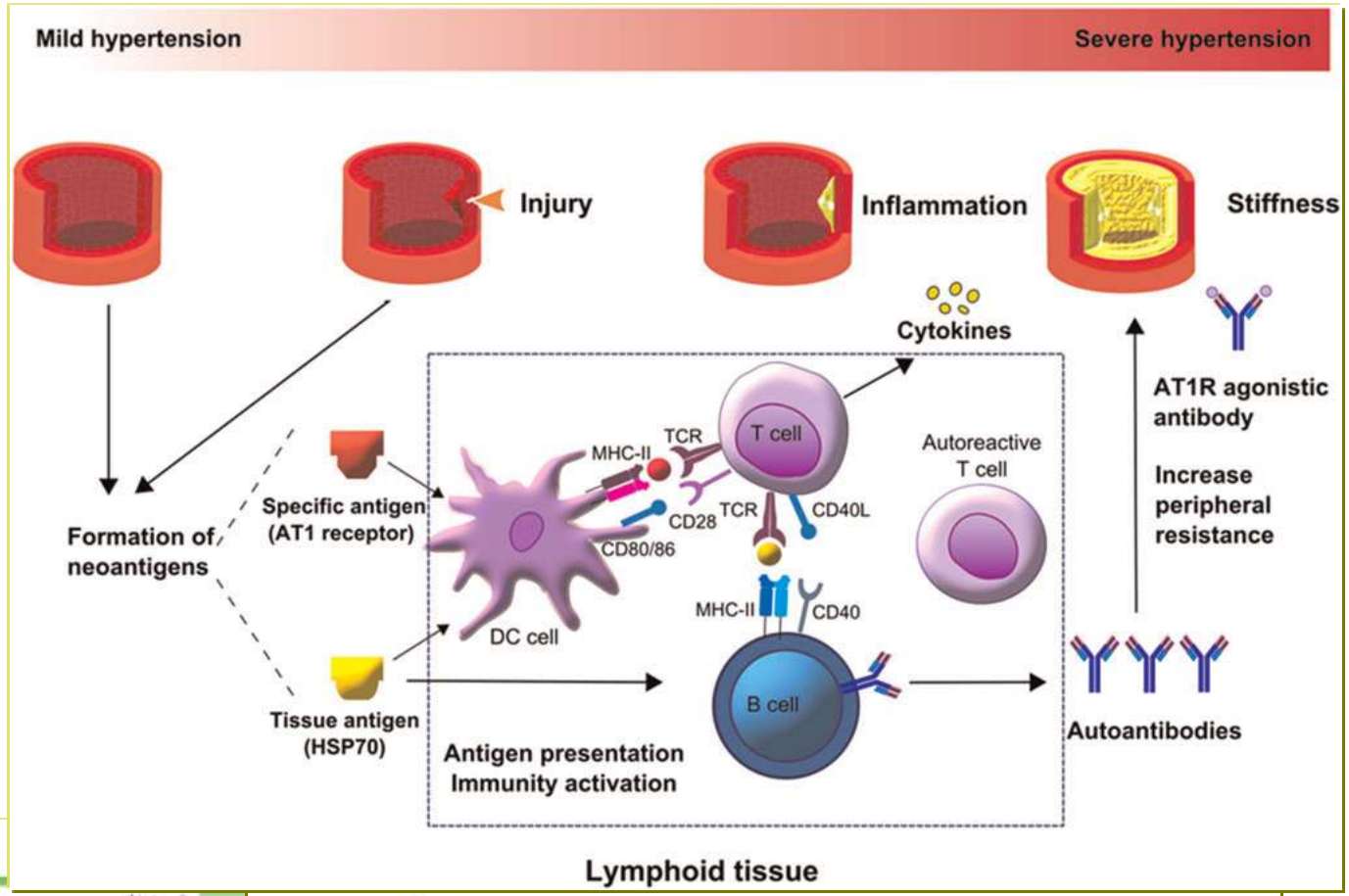
Building on the Current Scientific Evidence

Young S. Oh, Lawrence J. Appel, Zorina S. Galis, David A. Hafler, Jiang He, Amanda L. Hernandez, Bina Joe, S. Ananth Karumanchi, Christine Maric-Bilkan, David Mattson, Nehal N. Mehta, Gwendolyn Randolph, Michael Ryan, Kathryn Sandberg, Jens Titze, Eser Tolunay, Glenn M. Toney, David G. Harrison



***Hypertension*. 2016;68:281-288**

Hypertension and Immunity



Full Reviews

Immunity in arterial hypertension: associations or causalities?

Hans-Joachim Anders[1], Marcus Baumann[2], Giovanni Tripepi[3] and Francesca Mallamaci[3]

[1]Nephrologisches Zentrum, Medizinische Klinik und Poliklinik IV, Klinikum der Universität München, Munich, Germany, [2]Department of Nephrology, Klinikum rechts der Isar der Technischen Universität München, Munich, Germany and [3]Nephrology, Dialysis and Transplantation Unit & CNR-IFC, Clinical Epidemiology and Physiopathology of Renal Disease and Hypertension of Reggio Calabria, Reggio Calabria, Italy

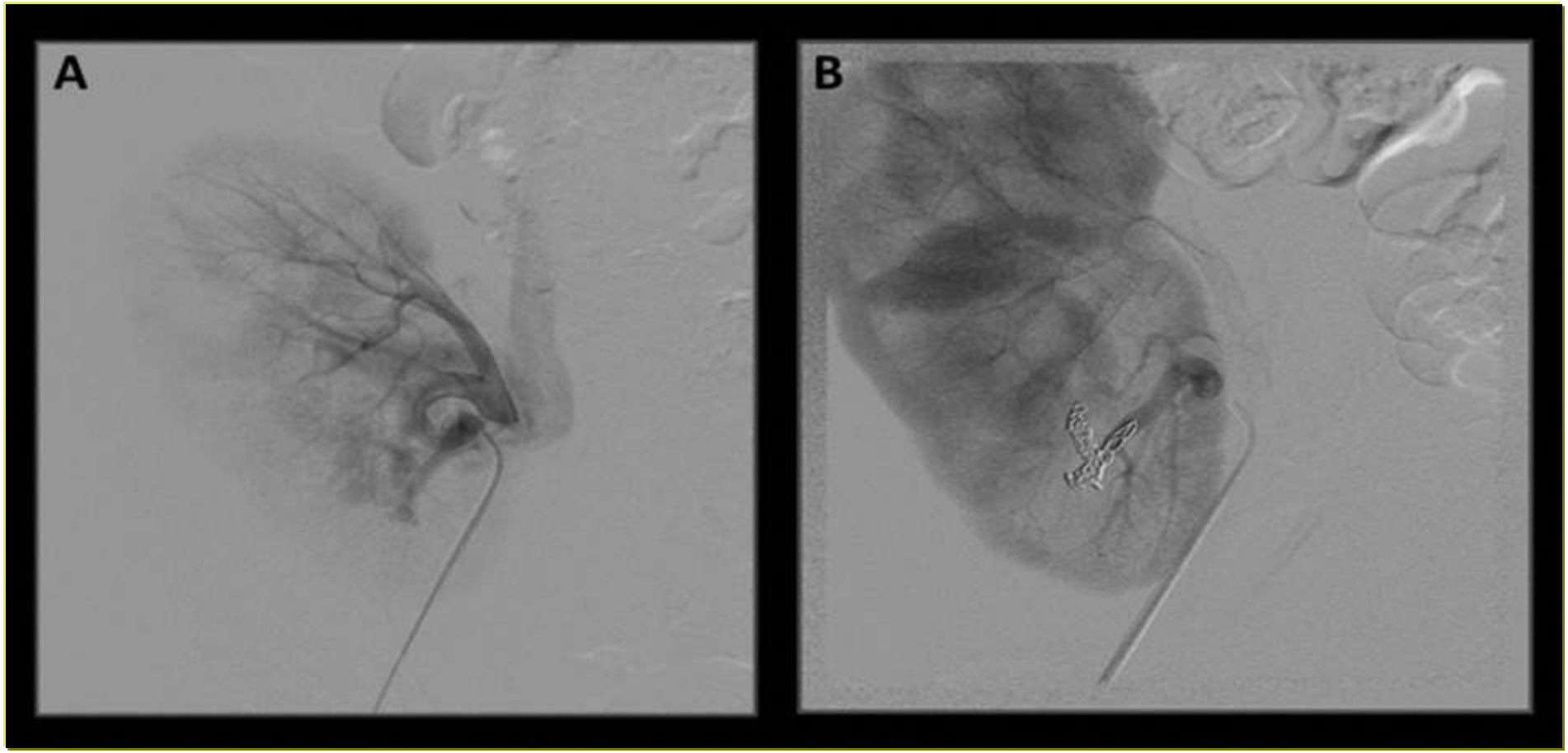
Nephrol Dial Transplant (2015) 30: 1959–1964

Post-transplant Hypertension: Mechanisms

Immunosuppressive Agent	Strategy
Steroid	Minimize Dose Elimination
Cyclosporine	Reduce target level Convert to tacrolimus Convert to belatacept
Tacrolimus	Reduce target level Convert to belatacept
Sirolimus/everolimus with CI	Convert to Mycophenolate Eliminate mTORi

Advances in Chronic Kidney Disease, Vol 22, No 2 (March), 2015: pp 154-164

Kidney Transplant and Sudden HTN



International Journal of Surgery Case Reports 25 (2016) 10–12

Does Severe HTN Preclude Transplantation

Urology and Nephrology Center

Clinical Transplantation

Kidney transplantation in patients with severe preoperative hypertension

Clin Transplant 2015: 29: 781–785

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Obesity and Hypertension: Dipping or Non

	Non-dipping				PR	95% CI
	Yes	%	No	%		
Lean[a]	22	13.7	139	86.3	1.00	Ref
Obese[a]	85	34.4	162	65.6	2.15	1.25–3.42

Abbreviation: CI, confidence interval; PR, prevalence ratio.

[a]Lean group defined as 15th–85th BMI percentile, obese group defined as ≥95th BMI percentile.

American Journal of Hypertension 29(5) May 2016

Hypertension and Sleep Disorders

Urology and Nephrology Center

Contents lists available at ScienceDirect

Advances in Medical Sciences

journal homepage: www.elsevier.com/locate/advms

Original Research Article

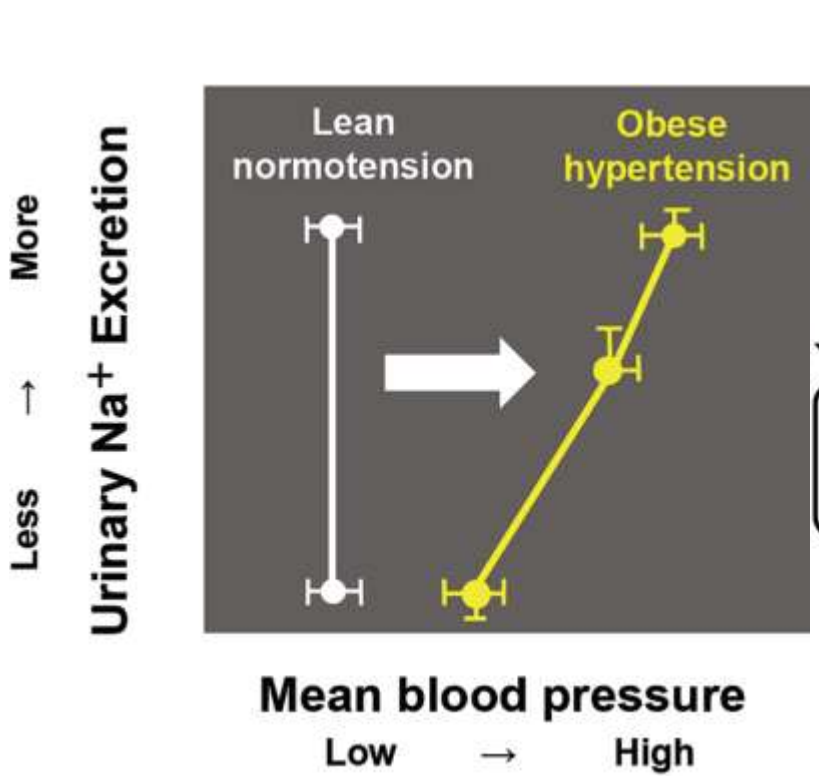
Assessment of sleep disorders among patients with hypertension and coexisting metabolic syndrome

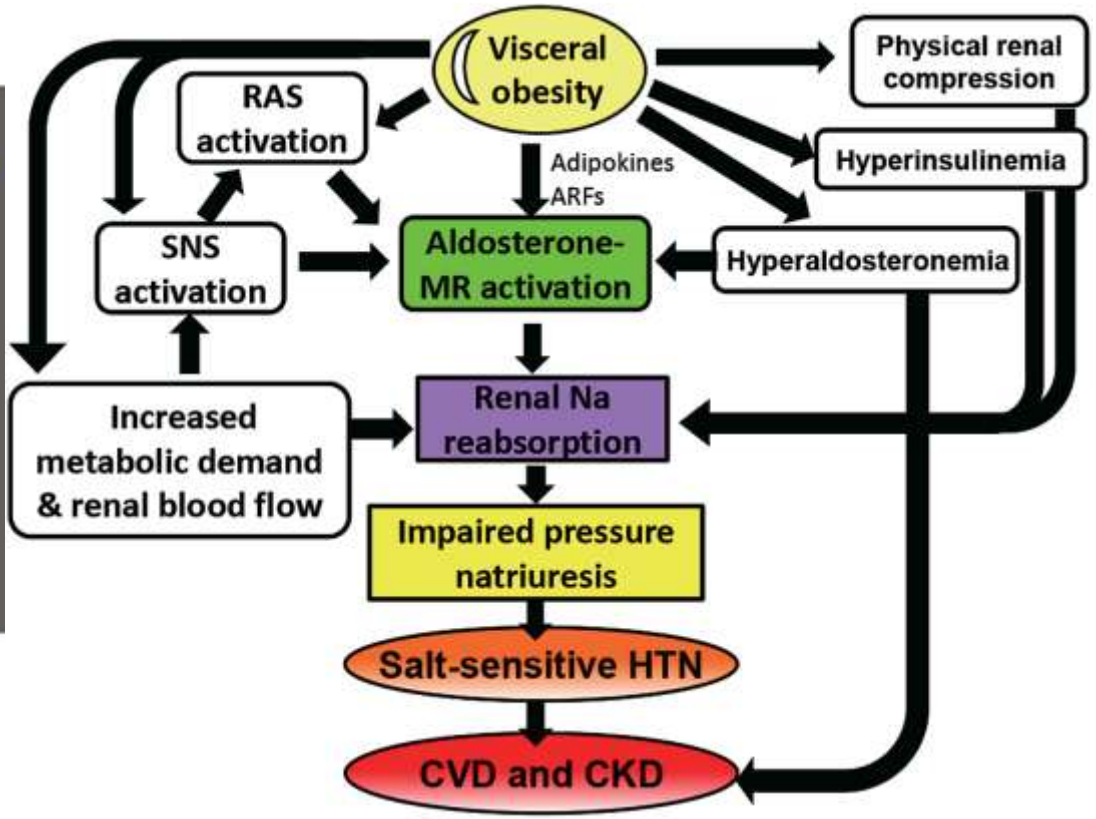
Grzegorz Kiełbasa [a], Katarzyna Stolarz-Skrzypek [b,*], Artur Pawlik [a], Monika Łątka [a], Tomasz Drożdż [a], Marta Olszewska [a], Agata Franczyk [c], Danuta Czarnecka [b]

[a] Cardiology Student Interest Group, First Department of Cardiology, Interventional Electrocardiology and Hypertension, Jagiellonian University Medical College, Cracow, Poland
[b] First Department of Cardiology, Interventional Electrocardiology and Hypertension, Jagiellonian University Medical College, Cracow, Poland
[c] Department of Clinical Pharmacy, Jagiellonian University Medical College, Cracow, Poland

Advances in Medical Sciences 61 (2016) 261–268

Obesity and HTN





American Journal of Hypertension 29(4) April 2016

Obesity and Hypertension: Water Aerobics

Urology and Nephrology Center

Research Article

Water aerobics is followed by short-time and immediate systolic blood pressure reduction in overweight and obese hypertensive women

Raphael Martins Cunha, MSc[a], Gisela Arsa[b], Eduardo Borba Neves[c], Lorena Curado Lopes, MSc[d], Fabio Santana[d], Marcelo Vasconcelos Noleto[d], Thais I. Rolim[d], and Alexandre Machado Lehnen, PhD[a,*]

[a]*Institute of Cardiology/University Foundation of Cardiology, Rio Grande do Sul, Brazil;*
[b]*Faculty of Physical Education, Federal University of Mato Grosso, Mato Grosso, Brazil;*
[c]*Brazilian Army Research Institute of Physical Fitness, Rio de Janeiro, Brazil; and*
[d]*Exercise Physiology Laboratory, State University of Goiás, Goiás, Brazil*

Manuscript received December 1, 2015 and accepted May 3, 2016

J Am Soc Hypertens 2016;10(7):570–577

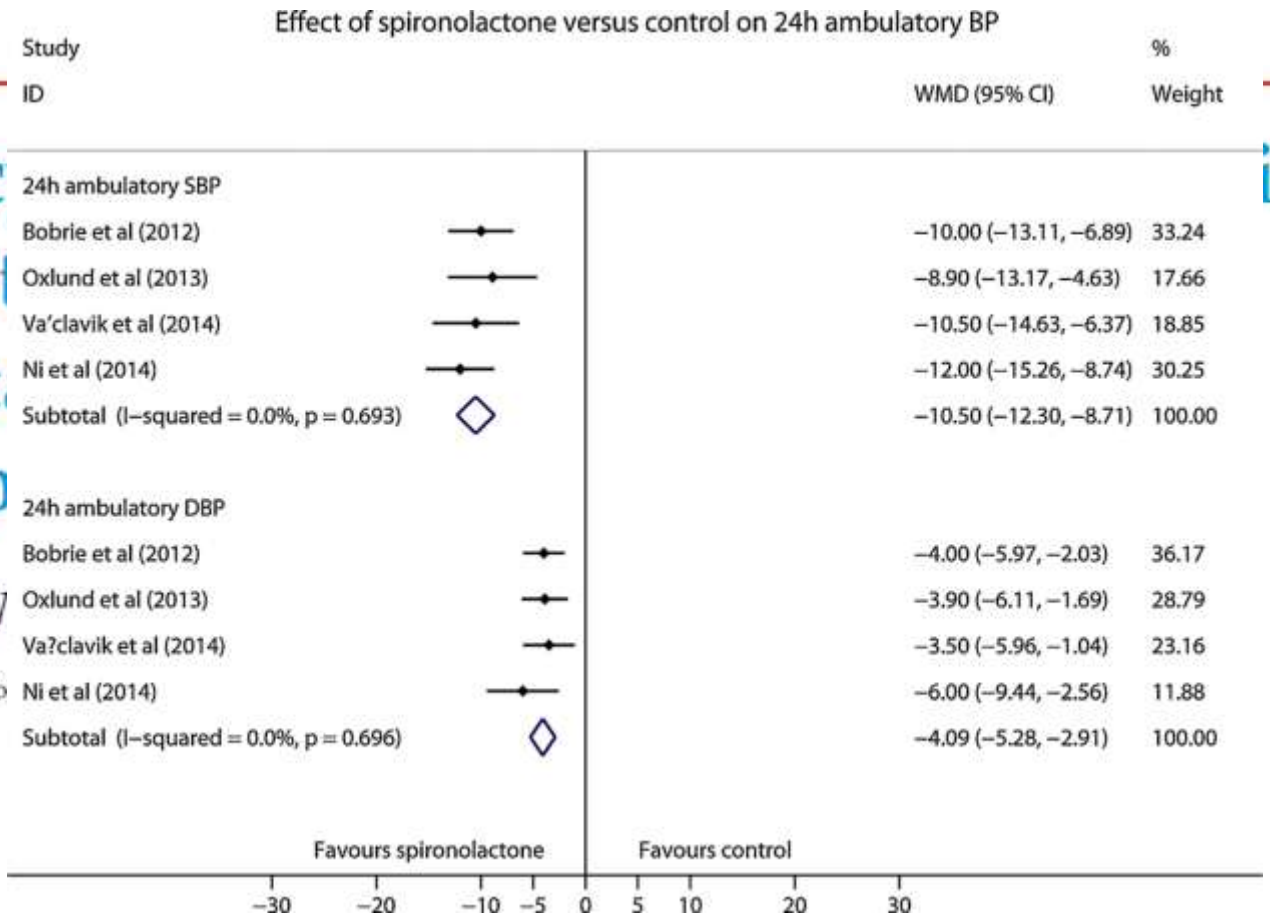
Resistant Hypertension: Spironolactone Story

Urology and Nephrology Center

Efficac … in
Patient …
A Met …
Contro …

Chunbin W …

Department of Cardio …



Heart, LungandCirculation(2016), in press

What is ARNi?

Urology and Nephrology Center

ARTICLE IN PRESS

IJCA-22711; No of Pages 5

International Journal of Cardiology xxx (2016) xxx–xxx

Contents lists available at ScienceDirect

International Journal of Cardiology

journal homepage: www.elsevier.com/locate/ijcard

Review

Angiotensin receptor–neprilysin inhibitor (ARNi): Clinical studies on a new class of drugs

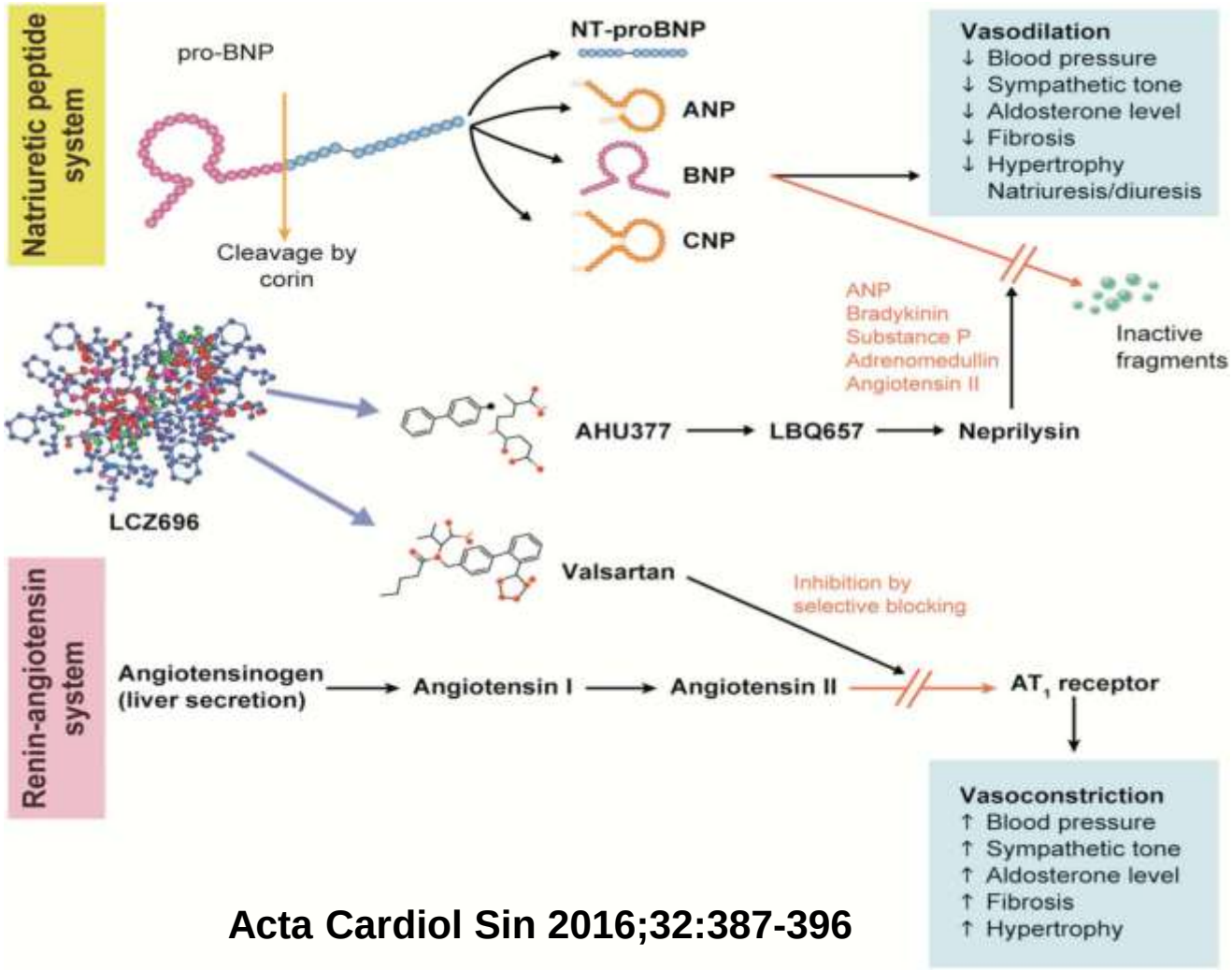
Mauro Gori [a], Maurizio Volterrani [b], Massimo Piepoli [c], Michele Senni [a,*]

[a] Cardiology, Heart Failure and Heart Transplant Unit, Azienda Ospedaliera Papa Giovanni XXIII, Bergamo, Italy
[b] Cardiology Department, Istituto di Ricovero e Cura a Carattere Scientifico San Raffaele Pisana, Rome, Italy
[c] Heart Failure Unit, Cardiology Dept., Guglielmo da Saliceto Hospital, Piacenza, Italy

LCZ696 (Valsartan/Sacubitril)

What is ARNi?

LCZ696 (Valsartan/Sacubitril)



Acta Cardiol Sin 2016;32:387-396

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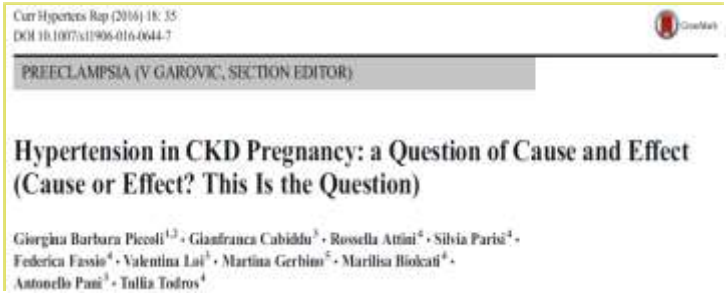
Hypertension and Pregnancy

Urology and Nephrology Center

Drug	Main features with respect to side effects in CKD	FDA "classic" labeling
To be avoided		
Short-acting nifedipine	Contraindicated by the FDA, RCOG, and AIPE due to the risk of severe hypotension with detrimental effects on placental flows. Severe sudden hypotension may have detrimental effects on kidney function	D
ACEi ARBs	Contraindicated due to the risk of major malformations, including cardiovascular, central nervous system, renal, and bone. These drugs are often implicated in AKI, and this may be particularly relevant in pregnant CKD patients	C 1st D 2nd 3rd

Curr Hypertens Rep (2016) 18: 35


Curr Hypertens Rep (2016) 18: 35
DOI 10.1007/s11906-016-0644-7

PREECLAMPSIA (V GAROVIC, SECTION EDITOR)

Hypertension in CKD Pregnancy: a Question of Cause and Effect (Cause or Effect? This Is the Question)

Giorgina Barbara Piccoli[1,2] · Gianfranca Cabiddu[3] · Rossella Attini[4] · Silvia Parisi[4] · Federica Fassio[4] · Valentina Lai[5] · Martina Gerbino[2] · Marilisa Biolcati[4] · Antonello Pani[3] · Tullia Todros[4]

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Medication Adherence

Urology and Nephrology Center

DNG Dalarkia Nephrology Group

Brief Review

Evaluation of Adherence Should Become an Integral Part of Assessment of Patients With Apparently Treatment-Resistant Hypertension

Advantages and Disadvantages		Indirect Methods				Direct Methods			
		Assessment by Clinician	Questionnaires	Pill Count	Prescription Refill	Witnessed Drug Intake	Electronic Monitoring	Tele-Monitoring	Drugs Dosage in Body Fluids
Advantages	Objectivity	↓↓↓↓	↓↓↓	↓↓	↓↓↓	↑↑↑↑	↑↑	↑↑	↑↑↑
	Accuracy	↓↓↓↓	↓↓↓	↓↓	↓↓↓	↑↑↑↑	↑↑↑	↑↑	↑↑↑
	Feasibility	↑↑↑↑	↑↑↑↑	↑↑↑	↑	↓↓↓	↑	↓↓	↓
	Educational value	↓↓↓	↑↑	↑	–	↑	↑↑↑↑	↑↑↑	↑↑
Disadvantages	Cost/workload	↓↓↓↓	↓↓↓	↓↓↓	↑	↑↑	↑↑↑	↑↑↑↑	↑↑
	White coat effect	–	–	↑↑↑	–	–	↓↓↓	↑↑	↑↑↑
	Social desirability bias	↓↓↓↓	↑↑↑↑	↑↑↑	↑↑	–	↑↑	↑↑↑	↓↓
	Manipulability	↓↓↓↓	↑↑	↑↑↑↑	↑↑↑	↓↓↓↓	↑↑↑↑	↓↓	↓↓↓

Social desirability bias: people respond to questioning in ways that make them seem more appealing to others or to healthcare providers. Manipulability: patients willingly manipulate the results of the assessment.

***Hypertension*. 2016;68:297-306**

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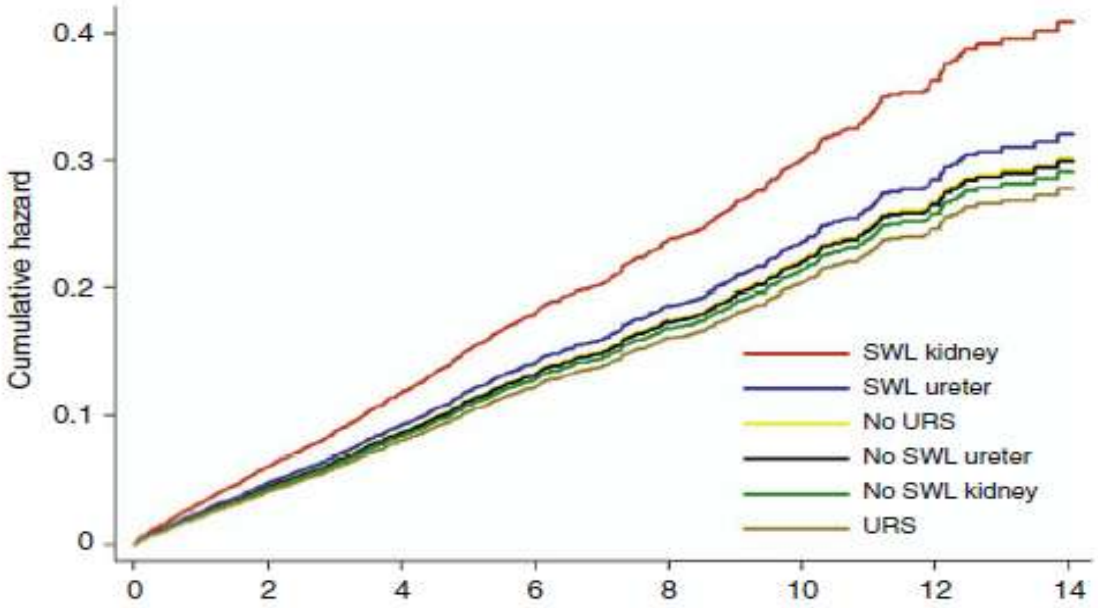
Hypertension and ESWL



Number at risk								
None	10,976	6682	4439	2891	1730	899	363	116
SWL kidney	238	569	428	267	161	76	28	7
SWL ureter	55	126	90	62	34	19	2	2
URS	273	510	344	218	126	74	25	6
SWL kidney/SWL ureter	2	54	35	25	15	10	4	3
SWL kidney/URS	0	49	46	36	21	11	4	1
SWL ureter/URS	0	28	23	12	12	4	1	0
SWL kidney/SWL ureter/URS	0	5	5	4	0	0	0	0

Kidney International (2016) 89, 185–192

Renin Angiotensin Converting Enzyme: ACE-2

Urology and Nephrology Center

Renin–Angiotensin System

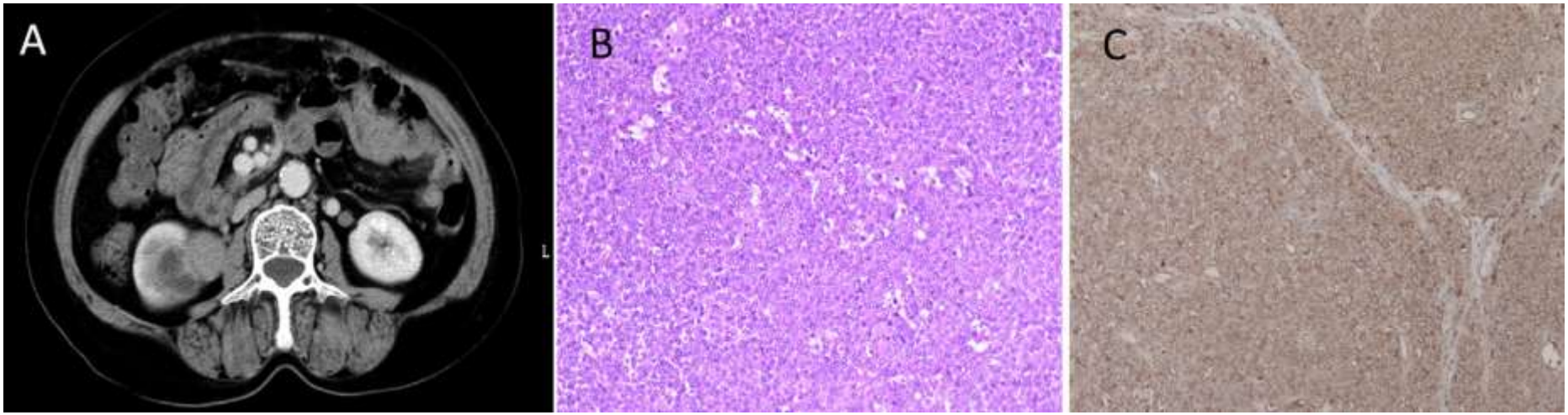
Angiotensin-Converting Enzyme 2 Metabolizes and Partially Inactivates Pyr-Apelin-13 and Apelin-17

Physiological Effects in the Cardiovascular System

Wang Wang, Shaun M.K. McKinnie, Maikel Farhan, Manish Paul, Tyler McDonald, Brent McLean, Catherine Llorens-Cortes, Saugata Hazra, Allan G. Murray, John C. Vederas, Gavin Y. Oudit

Hypertension August **2016;68:365-377**

Hypertension Case and Messages



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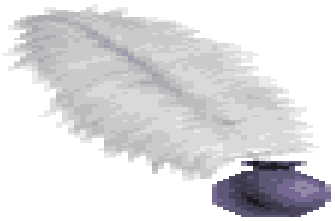

Urology and Nephrology Center

DNG
Dezfoulian Nephrology Group
رابطة أطباء الكلى بالمنطقة

احرص على حِفظ القلوب من الأذى
فرجوعها بعد التنافر يصعبُ

ان القُلوبَ إذا تنافر ودُّها
مثل الزُجَاجةُ كسرُها لا يُشْعَبُ